Castlemaine Naturalist

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Monthly newsletter of the Castlemaine Field Naturalists Club Inc.

Wedge-tailed Eagle, Guildford. Photo by Claire Morgan

Solutions to Insect Armageddon

Jill Williams

Our meeting on June 12 was presented via Zoom by Professor Phil Batterham, School of Biosciences/Bio21 at the University of Melbourne. Thirty one members and visitors joined the webinar. Phil introduced his talk by summarising the identification of the decline of insect populations over the last several decades – 9% decline per decade since 1925.

The number of insect species is estimated to be 5.5 million. Many insect species are vital for:

Pollination

Pest control (e.g. parasitic wasps).

Nutrient recycling

As a food resource for other animals higher in the food chain.

Bee Fly as pollinator

We do not know what most species contribute to biological ecosystems and agriculture. 'The world risks finding out the hard way, how vital all insects are'.

Several factors have been suggested as possible causes for the decline including climate change, farming practices, habitat loss and the use of insecticides – reported to be of the order of 600,000 tonnes per year. This is highly significant when most insecticides are used at extremely low concentrations and are not pest specific.

In recent times the insecticides collectively known as the Neonicotinoids have been singled out for scrutiny. Of these imidacloprid is currently the top selling insecticide. There is evidence that it contributed to Colony Collapse Disorder (CCD) in honeybees by adversely impacting behaviour.

Phil made reference to a web site https://www.tranquileye.com/clock/. The site shows two counters, one estimating the world population, which is increasing, and the other, the amount of the world's arable land, which is decreasing. Therefore, there is a constant imperative to produce more food from less land. Given these

pressures, insecticides play an important role in increasing agricultural productivity. Depending on the crop and location, insecticide usage increases yields by 6-79%.

Phil proceeded to focus on some research of the effects low-doses (2.5 ppm) of insecticides have on non-pest insects. It is known that imidacloprid targets the nervous system of insects. At low doses it can cause changes in behaviour while higher doses result in death - the start and end result of imidacloprid. But what is the in-between mechanism?

In bees, it is known that imidacloprid impairs:

navigation
foraging behaviour
feeding
olfactory learning
communication within the hive.

Drosophila melanogaster

Using the well-researched vinegar fly, *Drosophila melanogaster*, a non-pest insect, Phil's lab showed that imidacloprid not only interferes with signalling in the nervous system, but also triggers the production of damaging Reactive Oxygen Species (ROS). These molecules cause oxidative stress and damage in the brain and in the digestive system. The magnitude of the damage observed would negatively impact the survival of insect species in natural populations. Antioxidants (think blueberries for flies) can counter this effect. These findings aid in the better management of insecticide choices and application, and predicting possible modes of resistance.

Turning to another group of insecticides, the spinosoids, of which Spinosad is the major market product, Phil offered a conundrum. Because Spinosad was first isolated from a natural source, the soil bacterium *Saccharopolyspora spinosa*, it is classified as an 'approved organic' product. Its mode of action is similar to the neonicotinoids, but it generates severe impacts at much lower doses. It is of concern that chemicals that are considered 'organic' may not be safe.

This research focuses attention on alternative control strategies, so what are they?

Gene Drive - a process where an inserted targeted genetic modification could spread through a pest insect population faster than would occur under normal genetic transmission. There is intensive research under way to evaluate the efficacy and risks associated with this technology.

Endosymbiotic bacteria can be used as bio-control agents. They could be used to infect a pest insect species population and be passed on only within that species, disrupting reproduction leading to sterility of the host.

Genetically modified crops such as cotton, soybean and maize carry resistance to insect pest attack.

Phil was able to present technical detail with clarity, giving us an understanding of the ways that insecticides affect insects at the cellular level. We are grateful for his expert insights into one of the major challenges facing agriculture and horticulture – controlling the insects we don't want, while avoiding collateral damage to the insects that we need for food production and natural ecosystems.

July Observations (1942)

George Broadway

In this period of lockdown and isolation, it is good to be able to get out sometimes and observe what is happening In the natural world. Let us see what interesting things readers of "Wildlife" magazine were able to find during the dark days of 1942. Just remember that at this time in 1942 things were not going so well for us. It is interesting that people kept sending in the same specimens apparently not having read descriptions in previous copies of the magazine. So we had:-

INSECTS

Culla: "Insect nurseries" would be a better description than "Insect homes". They are galls formed by gall wasps and the tiny holes are where the young wasps escaped.

Ballarat: 1. Vine Moth, a grape vine pest, suggested treatment was Lead arsenate.

2. Gum Emperor Moth

Both of these have been often mentioned previously

Pascoe Vale: Small native variety of Cockroach, of which there are many. Most of them are not a nuisance in the house.

Bendigo: Crusader Bug, previously mentioned. Has a cross on the back. A pest of some fruit trees (and some of my natives). Use white oil or red oil emulsion spray being careful to spray the ground to catch those that fall to the ground as soon as they feel the spray coming.

Woomelang: Caterpillars of the Cabbage White Butterfly, *Pieris rapae.* Derris dust was recommended. Frequently mentioned.

Camberwell: The black and white moth is the Vine Moth. *Phalaenoides glycine.* Another frequent observation.

Goldsborough: The grey caterpillar with two flabby "horns" was the larva of *Pinara,* The Drinker Moth. It is a master of camouflage.

Canterbury: Cup Moth caterpillar. (Probably the "Painted Cup Moth") *Doratifera oxleyi*. Can sting with the rows of prickles on the back. Have reduced legs and feet and move along in the manner of a slug.

Wantirna: The eggs on the apple tree were those of a bug of the plant-sucking group and therefore harmful. Impossible to tell which particular species without the adult or larva.

Elsternwick: Saunders Casemoth, largest of our Australian casemoths which spin a silken cocoon in which the wingless female spends her entire life.

Tennyson: Harlequin Bugs. Can be a nuisance in gardens when they occur in numbers. Being sap-suckers they are not susceptible to Arsenic or similar. Contact sprays are required.

(My grandmother , when she found a large number assembled on a fence as they tended to do, would knock them off into a bucket of water with a dash of kerosene on top)

All of the above have been previously described. We now move on to :-

REPTILES

Rutherglen: The snake described was a young brown snake, poisonous but not as dangerous as the Tiger. The other more common young snakes, brown and grey were probably young Tigers.

Berrimul: Far from being a Death Adder, your specimen was an utterly harmless little ground snake called *Typhlops* which is inoffensive to anything larger than the insects and grubs on which it feeds. The mouth is minute and the spine in the tail is merely to help them to push their way through the soil.

Smithson (Tas): The lizard was the Jew Lizard, *Amphibolurus muricatus,* sometimes known as

"Bloodsucker" although it never sucks blood. Your little marsupial was a young Gunns Bandicoot, *Perameles gunnii.*

St Kilda: There are grass snakes, many of them venomous but too small to harm a human being and therefore classed as harmless. Unlike the young of larger snakes, they never grow any bigger. Yes! Ants frequently build turrets round their burrows at the approach of rain.

BIRDS

Fish Creek: The white bird in the swallows nest would be an albino. Sometimes white blackbirds or ravens occur but are extremely rare.

Richmond: It would be illegal to tell you how to care for a Mountain Duck in captivity. The species is protected and may not be kept in captivity.

MISC.

Yarck: Yes you heard the broadcast correctly. The animal which ejects its stomach when pursued by an enemy is the Sea Cucumber, Beche-de-Mer, or Trepang, a relative of the starfish *Echinoidea*. The enemy tucks into the morsel while the Trepang goes into hiding to grow a new stomach.

Charlton; and Horsham: A Mallee Mouse Spider *Eriodon* - one of the trapdoor spiders possessing long and sharp poison fangs. Has never been known to cause a fatality but can give a painful bite. The Charlton specimen was a large black female. No male has been found for this species, but a smaller red-fronted and blue bodied Eriodon lives in the same area so it is probable that they are the same species. (It has been decided more recently that the two are in fact male and female of the same species) *Eriodon occatorium*.

Mangalore: Another female Mallee Mouse.

Essendon: The small conical snails *Hellicella,* are natives of England and like our larger garden snails, introduced many years ago. Treat as for ordinary snails.

(My father used to have lots in his garden in Warrnambool where they used to do a lot of damage, but I have not seen them in Castlemaine. Has anyone?)

Jumping Spiders

Euan Moore

Jumping spiders are small spiders with big personalities. The males of some species (peacock spiders) are often brightly coloured. This species, the *Holoplatys invenusta*, (no common name) shares our home. Our most recent sighting in late April was the small black and white spider (left) which I didn't recognise immediately. Those I'd seen before had the bright yellow markings on the abdomen as shown in the second photo (right) from June 2018. The white rings on the abdomen are partially visible. Browsing the photos on ALA most have some of the yellow marking on the abdomen but about 10% are just black and white.

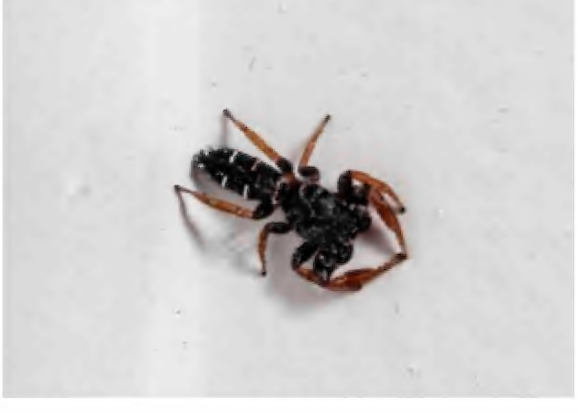


Photo Observations

Claire Morgan

Spotted Quail-thrush

Sighting June 2020. Reported foraging with a small group of birds, Sittellas, Thornbills and Scarlet robin. Working their way across the bush. Within 10kms of Castlemaine - photographed by George Morgan.

Geoff Courtis: birds in North Castlemaine (sent in by Dianne Thompson)

Yellow Robin on nest;

Owlet Nightjar;

Yellow-tufted Honeyeater

Claire Morgan: Black Kite

Little Eagle rescue

Geraldine Harris

4/5/20 Geoff and I went for a 'quick' walk along our creek on Monday and we disturbed a large bird of prey that flew out from the undergrowth and crash landed on the other side of the creek. We watched it for some time to ascertain if it was stunned or injured. Eventually it was obvious that it was unable to fly and it scrambled in under some fallen timber. We contacted the Wildlife Rescue people and kept watch until they arrived and carefully netted the bird. It appeared to have a neck wound and they took it off to the Hepburn Wildlife Shelter for treatment. On inspection, it looked as though it may have been attacked - possibly in one of the aerial combats that our son had reported over his house recently - the last one involving three wedgies and four or five kites! So much for our quick walk. We got home nearly three hours later!

13/5/20 We made contact with Wildlife Victoria rescue man and he was able to report that the bird, a "small eagle", was being treated for a talon wound to the neck. By 23/5/20 the bird was doing well.

18/6/20 The recovered Little Eagle released successfully back here! We were present when our wildlife rescue person brought our Little Eagle back from the Hepburn Wildlife Rescue centre. He was now recovered from his neck wound and ready for release. It was reluctant to leave the rescue container (probably because we were all standing nearby) but once lifted out he sat for just a moment before lifting off and landing in a very tall River Red Gum. Safely back home.

NOTE: I found a source online that quoted a Mr Mooney, from the Birdlife Australia Raptor Group, who said aerial conflicts were becoming more common, particularly in areas where there has been significant development.

"As we are losing habitat and the birds are losing their nesting spots, they are both having to argue over the same places," he said. "When there is plenty of habitat available for them, they space themselves out and they don't have these intense conflicts so often.... Decades ago when I started this work, these disputes were very, very rare … now it is quite common."

Another source suggested such fights sometimes occur over a food source such as a kangaroo or rabbit carcass.

Disclaimer: The opinions expressed in this newsletter are those of the contributors and not necessarily those of the club

Vale Chris (Kit) Morris

Chris (Kit) Morris was a long-time member of the club, whose enthusiasm for and knowledge of nature, especially birds, was valued by many members. We mourn his passing on 30th May, aged 90, and extend our sincere condolences to Helen and their family.

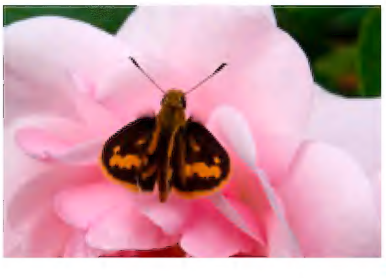
Chris Morris was born in Ceylon as it was then before it became Sri Lanka. His father was there as a tea planter. His secondary education was undertaken at The Royal Naval College in England, after which, at the age of 16, he joined the Merchant Navy. He obtained his certificate as Master Mariner and after some years at sea he navigated a dredge through the Panama Canal and across the Pacific, then via Tahiti to Australia, where he worked for some years for the shipping company ANL .

He married Helen in 1961 in her home state of Tasmania. After retiring from the sea he became involved with organisations like the Royal Australian Ornithologists Union where he served as Treasurer for a number of years. He and Helen purchased their property in Castlemaine in about 1991 and moved permanently here in 2005. Known to us at first as Chris, he gradually became Kit, a more endearing form of that name.

Having been a member of the RAOU, he quickly became a member of the CFNC where he contributed many interesting articles to the Newsletter; one memorable article, written in July 1997 described a pelagic trip he had taken in June of that year off Portland. His enthusiasm saw him very soon elected to the committee, and in 1995-6 he served a term as President, after which he remained an active committee member until very recently when hearing problems made things difficult for him. He was particularly interested in the bird surveys, coordinating the annual BOCA bird watching day (now the BirdLife Challenge Bird Count) and in the small reserves which had been set aside by the Conservation Council many years ago now. He was a driving force behind the club effort to remove Cape Broom from the Eltham Copper butterfly area in the Castlemaine Botanical Gardens Nature Reserve.

Kit always displayed a keen interest in matters ecological and an infectious enthusiasm. His knowledge and companionship will be greatly missed by his fellow members.

Wanted Butterfly Photos for the CFNC Website



We are in the process of updating the information about the local butterfly fauna on our website and need photos of the species found in the Mt Alexander region. We want to show what the butterflies look like when seen in the field so photos that show wings open, wings closed or other life stages will be useful. The photographer will be acknowledged.

Please email Euan Moore calamanthus5@bigpond.com if you can assist with this request.

Next (on-line) meeting - 7.30 pm Friday 10th July

Our guest speaker in July will be **Elizabeth Newton**, who has worked for DELWP but is currently seconded to Trust for Nature. Her talk will be a presentation via Zoom on the importance of ensuring environmental data is recorded on the Victorian Biodiversity Atlas.

"Exploring the purpose and significance of the Victorian Biodiversity Atlas database – making your observations count!"

The VBA is a foundation dataset that feeds into biodiversity tools used in the government's everyday environmental decision making. Approvals and permits, funding decisions, and burn planning all rely on biodiversity observations submitted to the VBA.

In this presentation we will cover what the VBA is, contributing your data, and how your own flora and fauna records can make a difference.

We will also explore why the Department of Environment, Land & Water (DELWP) uses the VBA, and how it differs and interacts with other biodiversity databases such as Atlas of Living Australia, iNaturalist, and Birdata.

If you registered for our May and/or June sessions, you will be sent the link for registering with Zoom on Monday 6th July. If you have not joined earlier webinars and wish to attend, please email Peter Turner at munrodsl@iinet.net.au

The speaker will follow the usual "observations" session where members can share recent interesting sightings (with an option to show a photo)

COMING EVENTS

Friday Aug 14: GEOFF WILLIAMS (Platypus conservancy) on Platypus conservation.

Friday Sept 11: LANA AUSTIN (Monash University) on 'Genetic variation in the Eastern Yellow Robin'

Business meetings - third Thursday of each month, are being conducted online.

Club website (Web master: Ron Wescott) - http://castlemainefnc.wordpress.com/

Castlemaine Naturalist - email newsletter material to: newsletter.cfnc@gmail.com

*Deadline for the August edition is 31st of July

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Ordinary membership: Single $35, Family $50
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